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Mixed Methods Analysis of Inclusive Pedagogy in a Population Health Sciences Graduate Curriculum

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Abstract

Underrepresentation and attrition of graduate students from diverse backgrounds reduce workforce diversity. Inclusive pedagogy practices promote learning environments where students from diverse backgrounds can thrive. We adopt categories from the National Institutes of Health (NIH)-Designated Populations with Health Disparities in our definition of diversity: race or ethnicity, socioeconomic status, rural residence, disability status, and sexual orientation. This study aims to empirically evaluate inclusive practices in a population health sciences graduate degree program, offering actionable recommendations for similar programs. We conducted a convergent mixed-methods study to evaluate inclusive practices in the first-year master's degree program curriculum at the Duke University Department of Population Health Sciences (DPHS). Guided by a conceptual framework, we evaluated inclusive practices in three domains: culturally inclusive pedagogy practices, health disparities coverage, and diverse representation within course materials. We reviewed eight foundational courses and interviewed 10 current students about their classroom experience. The curriculum exhibited several strong inclusive teaching practices, including addressing diversity and inclusion in syllabi, soliciting feedback from students, and covering material from diverse perspectives and health disparities. However, these practices were not universal in the program, creating opportunities for improvements across courses, addressing the unique needs of international students, and covering material from non-U.S. perspectives. We identified major strengths and some gaps that will inform actionable feedback for graduate training teaching faculty to enhance inclusive pedagogy in the population health curriculum. In addition, the approach outlined may be useful as a model for other graduate programs to formally evaluate their curriculum to generate context-specific recommendations.

Keywords

pedagogy, population health, mixed methods

Introduction

Graduate degree-granting population health programs in the United States are uniquely positioned to educate the next generation of scholars and practitioners equipped to tackle major public health crises, including addressing the chronic healthcare disparities that plague society. However, there exists a well-described lack of diversity in population health training programs (Jackson et al., 2018; Karlsen & Nazroo, 2002; Williams & Jackson, 2005). We adopt the categories from the National Institutes of Health (NIH)-Designated Populations with Health Disparities in our definition of diversity: race or ethnicity, socioeconomic status, rural residence, disability status, and sexual orientation (National Institute of Minority Health and Health Disparities, 2025). To address the growing population health needs of a more diverse society with complex health challenges, and make strides in eliminating health disparities, training programs must include diverse

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perspectives, incorporate health disparities theories and methods in course materials, and include diverse teaching methods to meet the needs of students with different learning styles. Population health and health disparities are primarily driven by societal and structural conditions that vary across lived experience—thus, integrating different perspectives into training programs can enhance the readiness of graduates to meet the needs of their communities and increase their capacity to serve as mentors and role models for other students (Antonio et al., 2004; Gurin et al., 2009; Jackson et al., 2018; Whitla et al., 2003).

Prior studies have shown that students from diverse backgrounds are less likely to matriculate to health sciences graduate programs and experience higher rates of attrition, which leads to a shortage of population health researchers with diverse lived experiences (Jackson et al., 2018; Sowell et al., 2015). Underrepresentation and attrition of diverse students in health sciences graduate programs can be attributable to several factors, including over-reliance on metrics (e.g., Graduate Record Examination) that inadvertently select against students from diverse backgrounds, and a lack of established trust and connections between academic institutions and underrepresented minority communities (Wilson et al., 2018). Another factor is a limited institutional responsiveness to the unique needs of diverse students (Jackson et al., 2018; O'Leary et al., 2020; Wilson et al., 2018), such as learning environments that are not inclusive or welcoming for students with diverse backgrounds and unique needs (e.g., sexual orientation, gender identity, learning styles, or parental status (O'Leary et al., 2020; Wilson et al., 2018). To address these challenges, culturally inclusive teaching (i.e., inclusive pedagogy) practices are encouraged because they center the needs of trainees by incorporating their sociocultural backgrounds, experiences, and perspectives in the learning environment—leading to better outcomes. Inclusive pedagogy is based on the premise that students are more engaged when academic content and skills are grounded in their lived experience or personal frames of reference (Cagle et al., 2020; Gay, 2000, 2002; Hammond, 2014; Savage et al., 2011; Wallitt, 2008). Key elements of culturally inclusive pedagogy are the development of a culturally diverse knowledge base and course content, the presence of caring learning communities, and the response to student backgrounds in instruction (Gay, 2000, 2002). Many departments lack teaching faculty who represent the breadth of diverse lived experiences of their students; and yet there are solutions that can mitigate this disconnect. Students have expressed that having a pedagogical partnership with teaching faculty that acknowledges and accounts for diverse learning styles, backgrounds and experiences that may impact learning is a key contributor to their success (Cook-Sather, 2018), and referred to hereafter as inclusive pedagogy. Classroom-based pedagogical partnerships can be paired with equitable graduate mentoring practices to fully support students and establish a foundation for future achievement (Almond et al., 2020).

The benefits of inclusive pedagogy are well established. Students receiving intentionally inclusive instruction benefit from improved attitudes toward, and achievements in, the subjects they are studying (Yu, 2018). Gaps between high-achieving and low-achieving students are significantly reduced after incorporating more inclusive teaching methods (Canning et al., 2019; O'Leary, 2020). Examples of these methods include the use of multicultural literature, active learning, and interacting with peers from diverse backgrounds. Promoting the use of multicultural literature (i.e., both representation *about* diverse communities as well representation *by* diverse scholars and authors) improves students' self-esteem, engagement, and academic performance (Moriña & Orozco, 2021). Active learning and interacting with peers from diverse backgrounds benefits all students involved with better educational outcomes and increased cultural competency (Gurin et al., 2004; Kalinoski et al., 2013). Further, both inclusive pedagogy practices and interactions with diverse students help alleviate the burden of stereotype threat—a phenomenon that occurs when underrepresented students feel pressure from pervasive negative stereotypes depleting their cognitive resources and leading to academic underperformance (Leyens et al., 2000; O'Leary et al., 2020; Spencer et al., 1999, 2016).

Employing culturally inclusive teaching strategies is an important step toward creating more welcoming environments for students from diverse backgrounds in graduate-level public and population health programs. Many programs have taken steps to incorporate inclusive teaching practices, but few have formally evaluated these practices to examine the level and uniformity of adoption, even within the same program, and to incorporate student feedback on gaps and opportunities for improvement. To address this need, we conducted a mixed methods study to evaluate inclusive pedagogy in the first-year master's curriculum at the Department of Population Health Sciences (DPHS) at Duke University. The results of our study will be used to provide recommendations for similar programs in evaluating culturally inclusive pedagogy within their education programs.

Methods

Study Design

Our convergent mixed-methods study (Creswell, 2017) had two main approaches. First, we conducted formal reviews of course syllabi using a structured review tool developed by the research team with the aim of evaluating the teaching faculty's official communications to students. Second, we included a qualitative description

component (Sandelowski, 2000, 2010) using one-time, semi-structured video interviews lasting approximately 30 min of all students in the first DPHS master's cohort with the aim of understanding their firsthand experiences in the classroom. We integrated the findings from each component on a concept-by-concept basis, reviewed the findings and generated summary results, and developed actionable recommendations for enhancing inclusive pedagogy at DPHS and other health-related graduate programs.

Research Ethics Approval

The Duke University Health System Institutional Review Board approved our study prior to data collection, and we verbally consented participants in the qualitative description portion of the study prior to the start of the interview.

Participants and Setting

The study was conducted in the Department of Population Health Sciences at Duke University (DPHS). Created in 2017, DPHS is a basic science department within the Duke University School of Medicine, with the first cohort of the DPHS degree-granting Master of Science in Population Health Sciences program matriculated in 2019. The Department currently includes 45 faculty members, 44 scholars with secondary appointments in the department, and 64 staff (Duke Department of Population Health Sciences, 2021).

All students in the first cohort of the DPHS master's program ($n = 10$) were eligible to participate in the interview portion of the study, with the exception of the researcher (A.S.). Each first-year master's student was required to take courses that covered the foundations of applied, qualitative, and quantitative aspects of study design and analyses in population health sciences. Recruitment of interview participants occurred via email over a two-week period. We sent students an initial email that included a study information sheet in order to arrange a time for the interview, with one follow-up email if students did not respond to the initial email. We scheduled students who consented to participating for an interview with A.S. at their earliest convenience. We did not provide any incentive for participation, but we assured students that their feedback would be used to generate recommendations to improve the program for future students.

The interviews were guided by information on power and sample size thought to be sufficient, even with fewer (e.g., six) participants because of three main factors: study scope, specificity of participant experiences, and strong dialogue quality (Malterud et al., 2015). The study scope focused specifically on the first cohort's experiences in the first-year curriculum. Participants were able to speak about their experiences with a high level of specificity and strong quality of dialogue because they completed the entire curiculm, as all students in the cohort participated.

Materials

The syllabus review tool and qualitative interview guide were both informed by the CIRTL INCLUDES' Inclusive Pedagogy Framework tool (2018) and assessed three domains: culturally inclusive pedagogy practices, health disparities coverage, and diverse representation in course content. The syllabus review tool assessed specific strategies addressing these domains in official communications by professors to students by noting if they were included in syllabi and, if so, descriptions on how they were addressed. One example was whether course syllabi included a diversity statement and, if it did, how did the statement address diversity. This item was adapted from a specific strategy falling under the core competency of inclusive communication in the CIRTL INCLUDES Inclusive Pedagogy Framework that stated to "include a syllabus statement that fosters an inclusive learning environment" ("Inclusive Pedagogy Framework," CIRTL INCLUDES, 2018).

The interview guide included questions around each of the study domains aimed at ascertaining students' firsthand experiences. Specifically, we were interested in students' experiences with teaching faculty's communication styles, teaching methods, health disparities coverage, and diverse representation in course materials. We captured these characteristics as the central components of diversity in our study because they were core components of the CIRTL INCLUDES framework. While the syllabus review tool contained items assessing specific strategies in course syllabi, the interview questions were more open-ended, allowing participants to guide the direction of the conversation around a domain. For example, rather than asking students directly about the CIRTL INCLUDES strategy of including a diversity statement in the syllabus (CIRTL INCLUDES, 2018), we instead asked them about professors' communication styles pertaining to inclusive practices.

Data Collection

We conducted syllabi reviews with the final versions of course syllabi, which we obtained from course webpages published by the teaching faculty. All the interviews were conducted in February 2021 on a secure, web-based platform and lasted around 30 min. After obtaining verbal consent at the start of the interview, we queried students about their experiences with each of the study domains (i.e., culturally responsive pedagogy practices around communication style and teaching methods, health disparities coverage, and diverse representation in course materials), followed by a demographic survey to

conclude the interview. The interviewer (A.S.) completed debriefing notes after each interview using deidentified audio recordings of the interviews, which he had previously saved to a secure study folder with the permission of the participants.

Data Analysis

Following the completion of syllabi reviews, we summarized the frequencies for each inclusive strategy assessed across all courses. Two researchers (A.S. and T.A.) summarized descriptive data for each culturally inclusive strategy, with a focus on strong practices exhibited in the syllabi. After completing debriefing notes, we analyzed qualitative interview data by employing rapid analysis and using matrix techniques (Hamilton, 2013). We summarized participant responses from the debriefing notes along the domains of interest with a focus on common responses, notable quotes, and points of major contention. We identified key concepts with consultation from the entire study team. We synthesized findings from both components of the study (i.e., the syllabi reviews and interviews) along the domains of interest. We incorporated insights and feedback from student and teaching faculty discussions to generate actionable recommendations for DPHS and other health-related graduate program teaching faculty to improve culturally inclusive pedagogy practices in their departments.

Supplementary Materials

The syllabus review tool, interview guide, and additional results which were not presented as main features of the analysis are available in the online only Supplementary File.

Results

We evaluated a total of eight courses in the syllabus review (six single-semester and two full-year courses). The first-year courses were foundational, with both discussion-based (Topics and Methods) courses and didactic (Statistics and Programming) courses. Each course was taught by two teaching faculty (with the exception of Professional Development, which had three), giving students exposure to an array of teaching faculty with varying areas of expertise and research. Table 1 summarizes the demographic characteristics of the qualitative interview cohort. All 10 invited students participated in the interviews (100% participation), which lasted 29 min on average. Students came from a range of ethnic, racial, and professional backgrounds with five international students in the cohort. We identified the following three domains of inclusive pedagogy practices described in detail in Table 2: (i) culturally inclusive pedagogy practices, (ii) health disparities coverage, and (iii) diverse representation in course content.

Actionable Recommendations

By synthesizing data from the syllabi reviews and qualitative interviews into key concepts, we developed actionable recommendations (Table 3) along the three domains. Recommendations addressing culturally inclusive pedagogy practices (Domain 1) included additions to the syllabus, such as a diversity statement with a personal elaboration; inclusion of gender pronouns; and explicit requests for feedback with instructions on how to submit confidential or non-confidential feedback to the teaching faculty. Recommendations generated from student interviews included incorporating a more conversational learning environment and providing a variety of participation options. The main recommendation for improving health disparities coverage (Domain 2) was to integrate a disparities perspective in each course instead of having the topic only covered in the discussion-based courses (i.e., Topics and Methods courses). Students specifically mentioned a desire to learn about racial biases in statistical models in statistics and programming courses as a potential enhancement to the curriculum. Recommendations related to diverse representation in course content (Domain 3) included providing readings covering diverse populations and methods of research in the syllabus as well as diverse formats of assigned materials beyond scientific articles. Summary recommendations for all domains are described in Table 3.

Discussion

In our mixed-methods study, we evaluated the first-year master's program at DPHS across three domains: culturally inclusive pedagogy practices, health disparities coverage, and diverse representation in course content. We evaluated the final published syllabi for all the first-year courses and conducted qualitative descriptive interviews with first-year students. We found that the first-year DPHS master's curriculum exhibited strong inclusive pedagogy practices, such as addressing diversity and inclusion in the syllabus, soliciting feedback from students, and covering material from diverse perspectives as well as health disparities. However, these practices were not universal in the program—through both course syllabus design and classroom instruction—and there were several opportunities for improvement especially around responding to the needs of international students and covering material from non-U.S. perspectives. Through this process, we provided recommendations for refining the education program that are relatively simple to implement short-term (e.g.,

Table 1. Characteristics of Qualitative Interview Cohort.

Variables	*N*
Age	
18–25	4
26–29	4
30–35	2
Gender identity	
Cis man	4
Cis woman	6
Highest degree earned	
Bachelor's	8
Graduate	2
Race/ethnicity	
African/African American/Black	1
Asian/Asian American	3
Middle Eastern/North African	1
White	4
White, Hispanic/Latinx	1
Ethnic origin	
White/European	2
Chinese	2
Cuban-American	1
Egyptian	1
Tanzanian	1
Taiwanese	1
Scottish, Irish, Swedish	1
Irish, German	1
Nationality	
American	6
Chinese	2
Taiwanese	1
Tanzanian	1
Interview characteristics	
Duration, minutes, Mean (SD)	28.9 (4.3)

additions to course syllabi, such as gender pronouns), as well as some that will require more thoughtful integration long-term (e.g., incorporating health disparities perspective into each course).

Our study fills a gap in the existing literature around culturally inclusive pedagogy, which has primarily been focused on establishing the benefits of employing inclusive strategies for students, rather than evaluating existing inclusive practices in programs (Stentiford & Koutsouris, 2020). Studies that do evaluate existing inclusive practices usually aim to develop tools that teaching faculty can use to self-assess their curricula and are almost exclusively set in the primary and secondary school contexts, as opposed to the postsecondary or graduate settings (Griner & Stewart, 2012; NYU Steinhardt, 2019). Studies addressing culturally inclusive pedagogy practices in undergraduate or graduate settings tend to study the impact of interventions addressing inclusive practices on teaching faculty attitudes (O'Leary et al., 2020) and graduate student attrition (Jackson et al., 2018; Sowell et al., 2015), rather than on addressing specific practices in the classroom. Thus, our study is one of the first to both develop assessment tools (i.e., syllabus review tool and student interview guide) and present data from using the tools and recommendations on how to improve culturally inclusive pedagogy practices in the graduate health program setting.

The strong inclusive pedagogy practices identified at DPHS is likely driven by the strong commitment to fostering a culturally inclusive climate across the entire departmental mission, including education. For example, a strong inclusive practice identified almost universally across all course syllabi was the widespread inclusion of the institutional diversity statement, a recommendation from the Teaching Innovation program to all teaching faculty prior to the program launch. Foundational learning in inclusion principles for all teaching faculty was highly encouraged, including a course devoted to Inclusive Pedagogy practices, further enhancing teaching faculty readiness to train, mentor, and support diverse students. These efforts are aligned with larger, institution-wide efforts, including with the Teaching Innovation program and the Graduate School, to promote inclusive practices that support a welcoming and vibrant learning environment for an increasingly diverse student body. For graduate-level health programs interested in a similar evaluation, it is important to consider the ongoing efforts and support by leadership and teaching faculty for such endeavors. The DPHS program's location in the southeastern United States influences its emphasis on race and ethnicity-based health disparities, reflecting local community needs. However, this focus presents an opportunity to expand course content to include global health disparities and balance U.S. and non-U.S. perspectives. Additionally, student feedback on varying teaching styles and expectations highlights the need to better support international students. We recommend that DPHS and similar programs adapt their teaching practices and course content to meet the needs of an increasingly diverse student body.

Our study also had several limitations. First, all syllabi reviews, interviews, and analyses were completed by one researcher (A.S.), which may influence result interpretation due to his positionality as a fellow student who also completed the master's curriculum coursework. However, his role as a student likely also contributed to the success in recruitment and enhanced the quality of the qualitative interviews due to existing rapport with the participants. Second, while the methods used in the study are highly replicable, the result of the current evaluation is specific to the DPHS context. The development of the syllabus review tool and qualitative interview guide would have benefited from further stakeholder engagement, particularly

Table 2. Domains of Inclusive Pedagogy from Analysis of Syllabi and Qualitative Interviews.

Domain	Description
Domain 1: Culturally Inclusive Pedagogy Practices	
Need for explicitly inclusive practice	The most common practice across almost all syllabi was a statement on diversity and inclusion, specifically an institutional statement used across Duke University (7 of 8 courses). An example of a particularly strong practice in one syllabus was the inclusion of a personal note from professors emphasizing the importance of and commitment to diversity from a personal lens in addition to the institutional statement. This trend was supported by feedback from students, who felt that the program was inclusive as a whole. However, most students did acknowledge that DPHS still had "room to grow" regarding culturally inclusive pedagogy practices ("Program would benefit from being more explicitly inclusive"). One method to explicitly address inclusive practices is through official communications to students in course syllabi, which were noticeably lacking in practices such as including a flexible parenting policy (1 of 8), acknowledging disability resources and accommodations (2 of 8), including a land attestation addressing colonization (0 of 8), and use of gender pronouns (0 of 8).
Diversity in participation options:	However, addressing syllabi is not the only way to explicitly address culturally inclusive practices. Students also expressed a desire for a conversational learning environment with a variety of participation options ("Students come from different cultures in the sense of how we participate in class, how we respond to questions, how we want to share the ideas that we have - the idea of participating and engaging with the class are different. . . Therefore, different modes of participation are necessary."). They also appreciated strategies such as having teaching faculty ask students about their backgrounds and experiences in healthcare and their learning style or preferred teaching methods, as these can all vary depending on students' cultural backgrounds. Furthermore, a variety in participation options such as group work, presentations, and practical exercises, would help courses actively account for diverse backgrounds, as would more variability in teaching methods used by professors in class and more recognition of lecture pace and need for pauses during instruction. This concern was especially raised for international students who sometimes struggle with adjusting to language and cultural barriers to learning. The integration of more participation options was further supported by the syllabus review results, which indicated a dearth of opportunities for students to meaningfully contribute to class instruction (3 of 8), grading (0 of 8), or course content or trajectory (2 of 8).
Evaluation metrics	Comprehensive rubrics for major assignments were also common across syllabi (5 of 8), with strong examples including comprehensive review sessions prior to exams and thorough instructions and grading breakdowns for written assignments. However, many students expressed significant dissatisfaction with vague assignment instructions and grading in the courses that did not provide clear expectations through rubrics or review sessions. Additionally, students also desired more evaluation of preparedness prior to courses and adjustment based on experience ("the level the professor teaches at needs to be adjusted by assessing where students are before jumping in").
Feedback	Solicitation of feedback from students was a practice that was not explicitly addressed in most syllabi (1 of 8), but students were still generally satisfied with opportunities to offer feedback. Specifically, they appreciated when feedback was encouraged through methods such as anonymous notecards and positive reinforcement of students' classroom contributions ("important to provide positive feedback after every comment"). Students also appreciated a conversational classroom environment and when professors were open and relaxed, which further facilitated strong communication with teaching faculty.
Domain 2: Health Disparities Coverage	
Strengths in discussion-based courses	The domain of health disparities coverage was addressed in half of the course syllabi (4 of 8). We mostly observed strong examples in discussion-based courses (i.e., Topics and Methods) as health disparities were more of a central focus in these courses than in Statistics and Programming courses. Students from the interviews supported this finding ("Social determinants of health are a main topic in population health, so health disparities were bound to come up. [Discussion-based] courses did a great job of covering and describing social determinants of health and disparities"). However, students also indicated a desire for more coverage of relevant health disparities or biases in Statistics and Programming courses as well. For example, several students expressed a desire for a class period dedicated to learning about biases in statistical models.
Focus on race and ethnicity	Students also expressed a desire to learn about disparities along social lines other than race and ethnicity (e.g., rurality, sexual orientation, socioeconomic status, etc.) as well as covering significance of and approach to addressing disparities more. Several students articulated that they felt well-informed about disparities that exist in the United States (especially around race and ethnicity), but were not sure how to go about working to reduce them ("We implicitly understood that health outcomes are distributed disparately, but didn't go beyond the descriptive. We could have used more explicitly addressing them in detail and about the process involved combatting them"). One method students offered to address this knowledge gap in the curriculum was to invite guest lecturers who have dedicated their scholarly work to the study of disparities or who work in community organizations, nonprofits, or other areas that address disparities and are outside of academia.

(continued)

Table 2. (continued)

Domain	Description
Domain 3: Diverse Representation in Course Content	
Diversity in assigned materials	The syllabus review indicated that some of the classes attempted to include diverse populations in assigned materials (4 of 8), including non-US centered populations or perspectives (3 of 8). Interview participants differed on their opinion of international or global health material, with some students satisfied with the level of coverage and others desiring more. However, most students expressed dissatisfaction with the lack of diversity in assigned materials ("more diverse reading materials would be helpful, instead of just scientific articles").
Teaching faculty diversity concerns	In qualitative interviews, students raised concerns about learning from primarily White teaching faculty, but that these concerns were partially alleviated by inviting guest speakers with diverse experiences to class. This was supported by the syllabi reviews which indicated that half of the course syllabi included guest speakers from diverse groups (4 of 8). Most students appreciated guest speakers with global health experience, but several were dissatisfied the lack of professional diversity of guest speakers (i.e., guest lecturers were mostly researchers within academia). They suggested bringing in more community members, organizers, and research participants in addition to the wide array of academics.

Table 3. Actionable Recommendations.

Culturally inclusive pedagogy practices

- Include a diversity statement in syllabus with a personal note on the importance of and commitment to diversity in addition to any institutional or departmental guidance to diversity.
- Include a land attestation in the syllabus addressing colonization with references to specific indigenous groups and ways to take action or support indigenous groups.
- Include gender pronouns in syllabus, email signatures, and other class communications.
- Explicitly solicit feedback from students in syllabus and in class with a convenient method for anonymous submission (e.g., an anonymous feedback link).
- Include a flexible parenting policy in the syllabus addressing topics such as breastfeeding/nursing, illness or disruptions in childcare, diversity in parenting status, seating arrangements, and accommodations for missed work.
- Provide opportunities for students to meaningfully shape their own learning experience through methods such as determining course materials and trajectory, determine evaluation or grading criteria, and lead or teach class on occasion.
- Provide students with comprehensive rubrics or evaluation criteria for assignments prior to submission, as well as thorough feedback when returning grades.
- Address disability in syllabus by providing resources (e.g., institutional resources such as Duke Disability Management System) and acknowledging accommodations for both visible and invisible disabilities.
- Foster a conversational learning environment whenever possible by using methods such as inviting students to share personal, professional, and cultural experiences, sharing professors' personal experiences, and opportunities for group work.
- Provide students with opportunities for additional assistance outside of class through regular office hours, information on how to get in contact with professors, and information on school-wide (e.g., Writing Center), online, and other external resources.
- Provide a variety of options for participation in class, as well as modes of teaching, including group work, presentations, discussions, and real-world, practical exercises.
- Evaluate readiness of students prior to the start of classes and adjust course expectations and content accordingly.

Health disparities coverage

- Integrate health disparities perspective into every course at appropriate level (i.e., throughout course for discussion-based courses and with dedicated class periods or sections for other courses such as statistics and programming).
- Explore disparities in curriculum along multiple social lines, not solely race and ethnicity.
- Invite guest speakers who have dedicated their scholarly work to the study of health disparities.

Diverse representation in course content

- Include readings or other assigned materials covering diverse populations in terms of race or ethnicity, socioeconomic status, rural residence, disability status, and sexual orientation. Additionally, include diverse methods of research (e.g., community-based participatory research).
- Invite guest speakers with diverse professional backgrounds and from systems outside of the US.
- Diversify the format of assigned materials beyond just scientific articles (e.g., with podcasts, videos, hands-on activities, etc.).

involving teaching faculty in priority-setting when designing the study and tools, although there was a teaching faculty member on the study team and we consulted with the Director of Graduate Studies in designing the evaluation. There were only 10 students who completed the entire curriculum at the time of study enrollment and recruitment. We obtained great detail and thematic saturation through our sequential mixed-methods study design but were unable to obtain data from a sample with large statistical power for more rigorous quantitative analysis techniques. Finally, some items in the syllabus review tool had to be interpreted broadly when the underlying concept was addressed, although the direct question was not. For example, not every syllabus provided a detailed evaluation rubric because assessments were conducted through exams rather than written assignments. However, most teaching faculty did prepare students with review sessions, thus addressing the underlying concept of communicating course expectations clearly. Further stakeholder engagement in the development of the tools could have helped avoid these kinds of issues.

Despite the limitations, our study is an important first step in evaluating culturally inclusive pedagogy practices in a population health graduate degree program. Our study had several key strengths. First, we developed straightforward and easily applicable tools that similar programs can adapt to their contexts and use to evaluate culturally inclusive pedagogy in their curricula. The process can be repeated periodically to provide ongoing evaluation of the DPHS master's program with adjustment as necessary based on departmental priorities. The qualitative description component of the study was accessible and a low burden to participants, only requiring a one-time virtual interview. Additionally, the qualitative insights gained through our semi-structured interviewing process yielded detailed guidance. These qualitative approaches are known to add meaningful evidence in research even with smaller sample sizes (Sandelowski, 1996; Vasileiou et al., 2018). Last, we provided explicit, actionable recommendations that DPHS and similar programs can implement immediately to address culturally inclusive pedagogy within the curriculum.

Our study has several significant future implications. In the short term, implementing these recommendations will result in a stronger, more culturally inclusive curriculum. Specifically, we identified that population health sciences degree-granting programs will benefit from more comprehensive health disparities coverage, especially in statistics and programming courses, and more diverse content in classes, including intentionally diverse authors of content, guest speakers from a variety of disciplines and professions, and a variety of participation options in the classroom. This will create a more welcoming environment for students from all backgrounds, including students from underrepresented racial and ethnic backgrounds. A more culturally inclusive environment will ensure the opportunity for diverse students to thrive and alleviate the issue of attrition for underrepresented minority students. In the long term, this work will create stronger programs in the fields of public and population health through the bolstering of minority representation among teaching faculty, leading to stronger research around health disparities and cultural inclusivity.

Conclusion

Our study was a first step at addressing the important domains of culturally inclusive pedagogy practices in graduate-level population health programs. We found several strengths in a new degree-granting program, as well as opportunities for improvement through course syllabi, course content, and classroom environments. Future directions should include implementing and evaluating these recommendations, engaging teaching faculty in the process, and addressing structural barriers in admissions to programs. We encourage graduate-level health programs to adapt the evaluation tools as needed to assess these domains within their own programs. To create more inclusive environments that foster success and career readiness for graduate students, especially those from diverse backgrounds, graduate health programs must adopt culturally inclusive and responsive pedagogy practices.

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Supplemental Material

Supplemental material for this article is available online at https://journals.sagepub.com/home/php.

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